

84059-17

05/13/2013

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MAY 13 2013

Mr. Keith J. Pitts
Vice President of Regulatory Affairs
Marrone Bio Innovations, Inc. (MBI)
2121 Second Street, Suite B-107
Davis, CA 95618

Re: MBI; Grandevo®
EPA Registration No. 84059-17
PRIA: Non-Fast Track Label Amendment (B680)
Non-PRIA: Label Notifications, Minor Formulation Amendment, and Response to a Term of Registration

Table with 3 columns: Type of Application, Date of Original Application, and OPP Decision Number. Rows include Label Notification, Response to a Term of Registration, PRIA Label Amendment, and Minor Formulation Amendment.

Dear Mr. Pitts:

The U.S. Environmental Protection Agency (EPA) has reviewed your request to amend the subject product registration, which included the following changes to the product label:

- 1) Correction of minor formatting inconsistencies and typographical errors (all sublabels).
2) Addition of the alternate brand names, MBI-203 DF3 and Grandevo® PTO (all sublabels).
3) Revision of the EPA File Symbol (84059-RT or pending as File Symbol 84059-) to an EPA Registration Number (84059-17) (all sublabels).
4) Insertion of "Manufactured [by][for]:" in front of MBI's name and address in accordance with 40 C.F.R. § 156.10(c) (all sublabels).
5) Addition of another container size (i.e., 30 lb) (all sublabels).
6) Clarification of the registered trademark associated with the Grandevo® primary brand name (all sublabels).

CONCURRENCES

Table for CONCURRENCES with columns for SYMBOL, SURNAME, and DATE. Includes handwritten entries: 7511P, KAUSCH, 05/13/2013.

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- 7) Addition of protective eyewear requirement to the Personal Protective Equipment section and the Agricultural Use Requirements box (sublabels A and B only).
- 8) Removal of the following statements from the Environmental Hazards section that is supported by conclusions/recommendations made in the EPA's April 23, 2013 Memorandum (all sublabels):

“This product is toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product if bees are visiting the treatment area.”

- 9) Modification/addition/deletion of several statements in the Product Information and Use Instructions sections (sublabels A and B) and the Home and Garden Use Directions section (sublabel C), including addition of the following statement that is supported by conclusions/recommendations made in the EPA's April 23, 2013 Memorandum:

“This product temporarily repels honeybees, for up to 4 to 6 days after spraying. When needed, time applications so that pollination is not disrupted.”

- 10) Modification/addition/deletion of several statements in the Ground and Aerial Applications – Mixing Directions section (sublabel A only).
- 11) Removal of the following information from particular sentences in the Aerial Drift Reduction Information – General and Aerial Drift Reduction Information – Sensitive Areas sections that is supported by conclusions/recommendations made in the EPA's April 23, 2013 Memorandum (sublabel A only, strikethrough indicates deleted text):

AERIAL DRIFT REDUCTION INFORMATION

“**GENERAL:** Avoiding spray drift at the application site is the responsibility of the applicator (~~specifically, see SENSITIVE AREAS section for the requirement regarding spray drift and honey bees.~~)”

“**SENSITIVE AREAS . . .** Do not allow spray to drift from the application site and contact people, structures people occupy at any time and the associated property, parks and recreation areas, non-target crops, ~~blooming crops or weeds that bees are visiting,~~ aquatic and wetland areas, woodlands, pastures, rangelands, or animals.”

- 12) Modification of several statements in the Chemigation Use Directions – Spray Preparation, Seed Treatment Use Directions, and Application Rates for Selected Crops sections (sublabel A only).
- 13) Revision of some crop group and commodity listings in accordance with 40 C.F.R. § 180.41 (e.g., removal of artichoke (globe) from the root and tuber vegetable crop group and establishment of separate application instructions for artichoke (globe)) (sublabels A and B only).
- 14) Addition of pests (e.g., bagrada bug and blueberry maggot) to certain crop group and commodity listings (all sublabels).

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- 15) Removal of the following statement from under the pome fruit crop group listing (sublabel A only):

“Use a 7-10 day re-treatment schedule to maintain control if the crop is growing rapidly or if there is heavy pest pressure.”
- 16) Removal of the following statements from under the stone fruit crop group listing (sublabel A only):

“Use a 7-10 day re-treatment schedule to maintain control if the crop is growing rapidly or if there is heavy pest pressure. Use a 3- to 4-day re-treatment schedule at flowering.”
- 17) Addition of the following statement under the sugar cane and turf commodity listings (sublabel A only):

“For grubs, applications should be timed to occur shortly after egg hatch when grubs are 1st or 2nd instar.”
- 18) Clarification of the application rates for the flowers, bedding plants, and ornamentals; shade and ornamental trees; and tree farms and plantations commodity listings (sublabel A only).
- 19) Addition of the following text (sublabel A only): “Label Date:” and “Made in the U.S.A.”
- 20) Replacement of the Ground Applications section with the Ground and Aerial Applications, Aerial Drift Reduction Information, and Chemigation Use Directions sections from revised sublabel A (sublabel B only). The only difference between the two sublabels is the insertion of the following statement in the Ground and Aerial Applications section of sublabel B:

“For hand-held or backpack sprayer applicators, mix GRANDEVO at the rate of 1-3 tablespoons per 1 gallon of water to approximate 1-3 pounds of GRANDEVO per 100 gallons of water.”
- 21) Addition of the following statement to the Application Instructions section (sublabel B only):

“Applications should be timed to occur shortly after egg hatch when grubs are 1st or 2nd instar.”
- 22) Addition of the following statement to the Directions for Suppression of Insect Pests of Turf section (sublabel C only):

“For grub control, apply GRANDEVO soon after egg hatch when grubs are 1st or 2nd instar.”

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- 23) Modification of the Container Handling statements to comport with information presented in Section VI and Attachment C of Chapter 13 of the Label Review Manual (sublabel C only).

The changes, as indicated above, also include Grandevo[®] label modifications proposed in notifications that MBI submitted to EPA with applications dated May 8, 2012 (OPP Decision No. 468408), February 20, 2013 (OPP Decision No. 475724) and March 1, 2013 (OPP Decision No. 476199).

Additionally, MBI requested to amend the Grandevo[®] registration by adding another alternate formulation in an application dated April 8, 2013 (OPP Decision No. 478669) and responded to term #4 of the May 1, 2012 Grandevo[®] Registration Notice by providing revised confidential statements of formula (CSFs) with an application dated October 9, 2012 (OPP Decision No. 471398). At EPA's request, you revised the CSFs provided with the October 9, 2012 and April 8, 2013 applications. There are now only three valid CSFs for this product registration: (1) basic formulation dated May 13, 2013, (2) alternate formulation #1 dated May 13, 2013, and (3) alternate formulation #2 dated May 13, 2013. All previously accepted Grandevo[®] CSFs have been superseded by the aforementioned CSFs. Further, you fulfilled term #4 of the May 1, 2012 Grandevo[®] Registration Notice with CSFs revised per the EPA's specifications.

All the changes referred to above, submitted in connection with registration under section 3(c)(5) of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), are acceptable provided that you submit two (2) copies of your final printed labeling before you release the product for shipment. Refer to the A-79 enclosure for further description of final printed labeling.

Should you wish to retain the reference to MBI's website on your label, then please be aware that the website becomes labeling under FIFRA and is subject to review by the EPA. If the website is false or misleading, the product would be misbranded and unlawful to sell or distribute under FIFRA section 12(a)(1)(E). 40 C.F.R. § 156.10(a)(5) lists examples of statements the EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration/amendment process. Therefore, should the EPA find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA-approved registration/amendment, the website will be referred to the EPA's Office of Enforcement and Compliance Assurance.

Your release for shipment of the product bearing the amended labeling constitutes acceptance of these conditions. If you have any questions regarding this letter, please contact Ms. Jeannine Kausch by telephone (703-347-8920) or email (*kausch.jeannine@epa.gov*).

Keith J. Pitts
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The April 23, 2013 EPA Memorandum and a stamped copy of the label are enclosed for your records.

Sincerely,



Kimberly Nesci, Chief
Microbial Pesticides Branch
Biopesticides and Pollution
Prevention Division (7511P)

Enclosures (3):

- Grandevo® Stamped, Accepted Label
- A-79 Enclosure
- April 23, 2013 EPA Memorandum

MASTER LABEL

GRANDEVO®

Alternate Brand Names: MBI-203 DF1, MBI-203 DF2, MBI-203 DF3, GRANDEVO® PTO

Sublabel A: Agricultural Crops
Sublabel B: Turf & Professional Landscape Use
Sublabel C: Home & Garden Use

EPA Registration No. 84059-17

ACCEPTED

MAY 13 2013

Under the Federal Insecticide, Fungicide,
and Rodenticide Act, as amended, for
the pesticide registered under
EPA Reg. No. 84059-17

7/53

Sublabel A: Agricultural Crops

GRANDEVO®

Alternate Brand Names: MBI-203 DF1, MBI-203 DF2, MBI-203 DF3, GRANDEVO® PTO



(For Organic Production) (For Use in Organic Production) (Can be used in organic production)
[OMRI Listed™ (logo)]

Active Ingredient: *Chromobacterium subsugae* strain PRAA4-1^T and spent fermentation media* 30.0%

Other Ingredients: 70.0%

Total: 100.0%

*Contains not less than 1000 Cabbage Looper Killing Units (CLKU)/mg. **Note:** The percent active ingredient does not indicate product performance and potency measurements are not federally standardized.

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

FIRST AID	
IF IN EYES	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15 – 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
IF INHALED	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. • Call a poison control center or doctor for further treatment advice.
IF SWALLOWED	<ul style="list-style-type: none"> • Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by the poison control center or doctor. • Do not give anything by mouth to an unconscious person.
IF ON SKIN OR CLOTHING	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 – 20 minutes. • Call a poison control center or doctor for treatment advice.
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-222-1222 for emergency medical treatment information.	

EPA Reg. No.: 84059-17

EPA Est. No.: XXXXX-XX-XXX

Net Weight: 5 lb, 30 lb.

Lot No: _____

Manufactured [by][for]: Marrone Bio Innovations, Inc.
2121 Second St., Suite B-107
Davis, CA 95618 USA
1-877-664-4476; www.marronebioinnovations.com; info@marronebio.com

US Patents No. 7,244,607

GRANDEVO® is a registered trademark of Marrone Bio Innovations, Inc.

Marrone Bio Innovations name and logo are registered trademarks of Marrone Bio Innovations, Inc.

**PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

CAUTION: Causes moderate eye irritation. Harmful if inhaled, swallowed or absorbed through the skin. Avoid contact with skin, eyes or clothing. Avoid breathing dust or spray mist. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear:

- long-sleeved shirt and long pants
- waterproof gloves
- shoes plus socks
- protective eyewear

Mixer/loaders and applicators must wear a dust/mist filtering respirator meeting NIOSH standards of at least N-95, R-95, or P-95. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization. Follow the manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables are available, use detergent and hot water. Keep and wash PPE separately from other laundry.

Engineering Controls: When handlers use closed systems, enclosed cabs or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

IMPORTANT: When reduced PPE is worn because a closed system is being used, handlers must be provided all PPE specified above for "applicators and other handlers" and have such PPE immediately available for use in an emergency, such as a spill or equipment breakdown.

USER SAFETY RECOMMENDATIONS

Users should:

- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

This product is toxic to aquatic invertebrates. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas.

This product is toxic to certain nontarget terrestrial arthropods. Minimize spray drift away from target area to reduce effects to nontarget insects.

For terrestrial uses: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. For any requirements specific to your State or Tribe, consult the State or Tribal agency responsible for pesticide regulation. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 4 hours.

PPE required for early entry to treated areas (that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil or water) is:

- Coveralls
- Waterproof gloves
- Shoes plus socks
- protective eyewear

EXCEPTION: If the product is soil incorporated or soil injected, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are **not** within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries or greenhouses.

Keep unprotected persons out of treated areas until sprays have dried.

PRODUCT INFORMATION

GRANDEVO is a biological insecticide/miticide/nematicide containing fermentation solids of *Chromobacterium subtsugae* strain PRAA4-1^T for use on ornamental plants, turf, edible crops, and poultry houses against the pests listed in the Directions for Use section. GRANDEVO functions primarily as a stomach poison for use in the control or suppression of many foliar-feeding pests, including caterpillars, and certain coleoptera. GRANDEVO has multiple effects, including reducing fecundity and oviposition, deterring feeding and acting as a stomach poison on Homoptera and Hemiptera, such as aphids, psyllids, whiteflies, *Lygus* and mealybugs, and on thrips and phytophagous mites infesting labeled crops or use sites. GRANDEVO must be mixed with water and applied as a foliar spray with ground or aerial equipment equipped for

conventional insecticide spraying, by chemigation, by soil treatment, by seed treatment or by direct spray to surfaces in poultry houses.

GRANDEVO can be used in the field, greenhouses, or poultry houses for the control of any labeled pest.

USE INSTRUCTIONS

GRANDEVO is a biological insecticide/miticide/nematicide for use against listed insects, mites and nematodes. Close scouting and early attention to infestations is highly recommended. For insects and mites, proper timing of application targeting new populations or recently hatched larvae and nymphs is important for optimal results. Applying GRANDEVO when pest populations are low is recommended.

This product temporarily repels honeybees, for up to 4 to 6 days after spraying. When needed, time applications so that pollination is not disrupted.

For insects and mites, thorough coverage of infested plant parts is necessary for effective control. GRANDEVO does not have systemic activity. For some crops, directed drop nozzles by ground machine are required.

Under heavy pest populations, apply a knockdown insecticide prior to or in a tank mix with GRANDEVO, use the higher label rates, shorten the spray interval, and/or increase the spray volume to improve coverage.

Repeat applications at an interval sufficient to maintain control, depending upon plant growth rate, insect and mite activity, and other factors. If attempting to control an insect population with a single application, make the treatment when egg hatch is essentially complete but when larvae or nymphs are young and before economic damage occurs.

To enhance control, consider tank mixing with contact insecticides/miticides/nematicides. Use the lower label rates of GRANDEVO when populations are low and when tank mixing with other insecticides/miticides/nematicides. Use the higher rates of GRANDEVO when applied stand-alone, when populations are high or when egg numbers are high.

For hard-to-wet crops, consider using a spreader/sticker or adjuvant, which has been approved for targeted crop use, to enhance coverage and adhesion of GRANDEVO to the crop.

GRANDEVO has been evaluated for phytotoxicity on a variety of crops under various normal growing conditions. However, testing all crop varieties, in all mixtures and combinations, is not feasible. Prior to treating entire crop, test a small portion of the crop for sensitivity.

GROUND AND AERIAL APPLICATIONS

Apply GRANDEVO in ground and aerial equipment with quantities of water sufficient to provide thorough coverage of infested plant parts. The amount of water needed per acre will depend upon crop development, weather, application equipment, and local experience.

Do not spray when wind speed favors drift beyond the area intended for use.

Avoiding spray drift is the responsibility of the applicator.

Mixing directions

Important - Do not add GRANDEVO to the tank mix before introducing 3/4 of the desired amount of water. Add water to the mix tank. Start the mechanical or hydraulic agitation to provide moderate circulation before adding GRANDEVO. Add the desired volume of GRANDEVO to the mix tank and continue circulation while adding the remainder of the water. Maintain circulation while loading and spraying. Do not mix more GRANDEVO than can be used in 24 hours. Use a strainer no finer than 50 mesh in conventional spray systems.

Spray volume

For conventional air and ground applications, use at least 10 gallons of total volume per acre in water-based sprays.

Tank mixing

Do not combine GRANDEVO in the spray tank with other pesticides, surfactants, adjuvants, or fertilizers if there has been no previous experience or use of the combination to show it is physically compatible, effective, and non-injurious under your use conditions. Observe the most restrictive of the labeling limitations and precautions of all products used in mixtures.

To ensure compatibility of tank mix combinations, they must be evaluated prior to use. To determine the physical compatibility of this product with other products, use a jar test. Using a quart jar, add the proportionate amounts of the products to one quart of water with agitation. Add dry formulations first, then flowables, and then emulsifiable concentrates last. After thoroughly mixing, let this mixture stand for 5 minutes. If the combination remains mixed or can be readily remixed, it is physically compatible. Once compatibility has been proven, use the same procedure for adding required ingredients to the spray tank.

AERIAL DRIFT REDUCTION INFORMATION

GENERAL: Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment- and weather-related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions. Where states have more stringent regulations, they should be observed.

Do not apply directly to aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, streams, marshes, ponds, estuaries, and commercial fish ponds).

INFORMATION ON DROPLET SIZE: Use only medium or coarser spray nozzles according to ASAE (S572) definition for standard nozzles. In conditions of low humidity and high temperatures, applicators should use a coarser droplet size. The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that will provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see Wind, Temperature and Humidity, and Temperature Inversions).

CONTROLLING DROPLET SIZE: Volume - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets. Pressure - Do not exceed the nozzle manufacturer's specified pressures. For many nozzle types, lower pressure produces larger droplets. When high flow rates are needed, use higher flow rate nozzles instead of increasing pressure. Number of Nozzles - Use the minimum number of nozzles that provide uniform coverage. Nozzle Orientation - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the

recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential. Nozzle Type - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

BOOM WIDTH: For aerial applications, the boom width must not exceed 75% of the wingspan or 90% of the rotary blade.

APPLICATION HEIGHT: Do not make applications at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind. If application includes a no-spray zone, do not release spray at a height greater than 10 feet above the ground or crop canopy.

SWATH ADJUSTMENT: When applications are made with a crosswind, the swath will be displaced downward. Therefore, on the upwind and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase with increasing drift potential (higher wind, smaller drops, etc.).

WIND: Only apply this product if the wind direction favors on-target deposition. Do not apply when the wind velocity exceeds 15 mph. Drift potential is lowest between wind speeds of 2 - 10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. NOTE: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

TEMPERATURE AND HUMIDITY: When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

TEMPERATURE INVERSIONS: Do not apply during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small, suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

SENSITIVE AREAS: The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g. when wind is blowing away from the sensitive areas). Do not allow spray to drift from the application site and contact people, structures people occupy at any time and the associated property, parks and recreation areas, non-target crops, aquatic and wetland areas, woodlands, pastures, rangelands, or animals.

CHEMIGATION USE DIRECTIONS

Spray preparation

First, prepare a suspension of GRANDEVO in a mix tank. Fill tank with ¾ of the amount of water for the area to be treated. Start mechanical or hydraulic agitation. Add the required amount of GRANDEVO, and then the remaining volume of water. Then, set the sprinkler to deliver a minimum of 0.1 to 0.3 inch of water per acre. Start sprinkler and uniformly inject the suspension of GRANDEVO into the irrigation water line so as to deliver the desired rate of GRANDEVO per acre. Inject the suspension of GRANDEVO with a positive displacement pump into the main line ahead of a right angle turn to ensure adequate mixing. GRANDEVO is to be metered continuously for the duration of the water application. If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.

Do not combine GRANDEVO with other pesticides, surfactants, adjuvants, or fertilizers for application through chemigation equipment unless prior experience has shown the combination to be physically compatible, effective and non-injurious under your conditions of use.

General Requirements -

- 1) Apply this product only through sprinkler, including center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun, solid set, or hand move, or drip (trickle) irrigation systems. Do not apply this product through any other type of irrigation system.
- 2) Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water.
- 3) If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.
- 4) Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.
- 5) A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

Specific Requirements for Chemigation Systems Connected to Public Water Systems -

- 1) Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.
- 2) Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, backflow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the flow outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.
- 3) The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- 4) The pesticide injection pipeline must contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the

system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.

- 5) The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.
- 6) Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- 7) Do not apply when wind speed favors drift beyond the area intended for treatment.

Specific Requirements for Sprinkler Chemigation -

- 1) The system must contain a functional check valve, vacuum relief valve and low-pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
- 2) The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- 3) The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- 4) The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- 5) The irrigation line or water pump must include a functional pressure switch, which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- 6) Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- 7) Do not apply when wind speed favors drift beyond the area intended for treatment.

Specific Requirements for Drip (Trickle) Chemigation -

- 1) The system must contain a functional check valve, vacuum relief valve and low-pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
- 2) The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- 3) The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- 4) The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- 5) The irrigation line or water pump must include a functional pressure switch, which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- 6) Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

Application Instructions for All Types of Chemigation -

- 1) Remove scale, pesticide residues, and other foreign matter from the chemical supply tank and entire injector system. Flush with clean water. Failure to provide a clean tank, void of scale or residues, may cause product to lose effectiveness or strength.
- 2) Determine the treatment rates as indicated in the directions for use and make proper dilutions.
- 3) Prepare a solution in the chemical tank by filling the tank with the required water and then adding product as required. Utilize agitation to keep solution in suspension.

Application Instructions for Drip Chemigation

- 1) Check to be sure that the system provides a uniform waterflow.
- 2) Irrigate crop with sufficient water to wet the root zone. Then, begin flow of the solution containing product solution from the chemical tank for a period to uniformly distribute the material. Discontinue flow of the GRANDEVO mixture and let the system continue to run only as necessary to purge the line with fresh water. Let the GRANDEVO solution remain in the root zone of the crop.

SEED TREATMENT USE DIRECTIONS

GRANDEVO can be applied as a seed dressing at plant or in commercial seed treatments for suppression of insect damage to corn, cotton and legumes at rates specified in the DIRECTIONS FOR USE section. GRANDEVO may be applied as a water-based slurry with other registered seed treatment insecticides and fungicides through standard slurry- or mist-type commercial seed treatment equipment.

Mixing instructions: Prepare no more mixture than is required for the immediate operation. Agitate the solution continuously during mixing and application. Mechanical mixing is recommended for proper mixing of GRANDEVO mixtures.

GRANDEVO alone: Add ½ of the required amount of water to the mix tank. With the agitator running, add GRANDEVO to the mix tank. Continue agitation while adding the remainder of the water. Begin application of the solution after GRANDEVO has completely dispersed into the mix water. Maintain agitation until all the mixture has been applied.

GRANDEVO + tank-mixtures: Add ½ of the required amount of water to the mix tank. Start the agitation before adding any tank mix partners. In general, tank mix partners should be added in this order: wettable powders, dry flowable formulations, liquid flowable formulations, and emulsifiable formulations. Always allow each tank mix partner to become completely dispersed before adding the next component. Maintain continuous agitation until all components have been dispersed and throughout the application process.

Note: When using GRANDEVO in tank mixtures, all products in water-soluble packaging should be added to the tank before any other tank mix partner, including GRANDEVO. Allow the water-soluble packaging to completely dissolve and the product(s) to completely disperse before adding any other tank mix partner to the tank.

If using GRANDEVO in a tank mixture with other seed treatment products, observe all directions for use, crops/sites, use rates, dilution ratios, precautions, and limitations that appear on the tank mix partner label. No label dosage may be exceeded and the most restrictive label

precautions and limitations must be followed. This product must not be mixed with any product that prohibits such mixing.

For Pre-plant Seed Treatment: Do not use treated seed for food or feed purposes or process for oil. Treat only those seeds needed for immediate use, minimizing the interval between treatment and planting. Do not store excess treated seeds beyond planting time.

For Commercial Seed Treatment: This product does not contain dye and is not covered by an appropriate tolerance, tolerance exemption, or other clearance under the Federal Food, Drug and Cosmetic Act. To comply with 40 CFR 153.155, therefore, all seeds treated commercially with this product must be colored with an EPA-approved dye or colorant of a suitable color to prevent accidental use as food for man or feed for animals. The Federal Seed Act requires that bags containing seed treated with this product shall be labeled with the following information: "This seed has been treated with *Chromobacterium subtsugae* strain PRAA4-1^T. Do not use for food, feed or oil purposes."

SOIL TREATMENT USE DIRECTIONS

GRANDEVO can be applied by soil drench, in-furrow spray, or soil injection to protect against certain soil-borne insects or nematodes.

In general, GRANDEVO can be applied by the following methods, unless specified differently in the SELECTED CROPS section:

Soil Drench Applications: Apply GRANDEVO at a concentration of 1-3 pounds per 50 to 75 gallons of water (2-6 pounds per 100 to 150 gallons of water), and at a sufficient rate to thoroughly soak the growing media and root zone. Multiple drench applications can be made on a 10 -14 day interval for insect control treatments. Nematode control treatments are limited to pre-plant or at-plant soil drench applications.

Shanked-In and Injected Applications: GRANDEVO, at a concentration of 1-3 pounds per 50 to 75 gallons of water (2-6 pounds per 100 to 150 gallons of water), can be shanked-in or injected into the soil alone, or with most types of liquid nutrients.

In-Furrow Applications: At planting, apply GRANDEVO as an in-furrow spray or as a 5-7 inch band (T-band) over an open furrow at the rate of 1-3 pounds per 1/2 acre (2 - 6 pounds per acre or 1.8-7.35 ounces per 1000 feet of row) according to the chart below. Apply GRANDEVO in 20 to 50 gallons of water so the spray is directed over the seed furrow just before the seeds are covered.

Rate	In-Furrow and T-band Application Rates Product per 1000 row feet (in oz.)					
	30" Rows	32" Rows	34" Rows	36" Rows	38" Rows	40" Rows

Ounces per 1000 row feet	1.8 - 5.5	2.0 - 6.0	2.1 - 6.25	2.2 - 6.6	2.3 - 7.0	2.45 - 7.35
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30" = 17,424 row ft./acre, 32" = 16,315 row ft./acre, 34" = 15,374 row ft./acre, 36" = 14,520 row ft./acre, 38" = 13,754 row ft./acre, 40" = 13,068 row ft./acre.

APPLICATION RATES FOR SELECTED CROPS

For greenhouse applications on the crops and pests listed, use 1-3 pounds of GRANDEVO in 100 gallons of water sprayed until just before point of runoff.

See specific application rates for each crop for additional details on greenhouse applications and for all other application types.

FOR USE ON THE FOLLOWING CROPS FOR CONTROL OF SPECIFIED INSECTS AND MITES:

Pre-harvest Interval (PHI) = 0 days

Alfalfa (Hay and Seed), Hay and Other Forage Crops

1-3 pounds of GRANDEVO per acre

Alfalfa webworm, alfalfa caterpillar, armyworms, cutworms, European skipper, sod webworm

2-3 pounds of GRANDEVO per acre

Plant bugs, spittle bugs, aphids, billbugs, chinch bug, mites (such as clover, Bermuda grass stunt, two-spotted, winter grain), leafhoppers, *Lygus* (such as tarnished plant bug)

Artichoke (Globe)

1-3 pounds of GRANDEVO per acre

Armyworms, artichoke plume moth, loopers

2-3 pounds of GRANDEVO per acre

Aphids, whiteflies

Asparagus

2-3 pounds of GRANDEVO acre

Aphids, armyworms, asparagus beetle, cutworms, spotted asparagus beetle, stink bugs

Asparagus beetle and spotted asparagus beetle. Apply when adults or larvae are seen feeding on new spears and during the fern stage when field counts or crop injury indicates damaging populations.

Bananas

2-3 pounds of GRANDEVO per acre

Banana skipper, stink bugs

Brassica (Cole) Leafy Vegetables

Broccoli, Broccoli Raab, Brussels Sprouts, Cabbage, Chinese Broccoli, Chinese Cabbage (Bok Choy), Chinese Cabbage (Napa), Chinese Mustard Cabbage (Gai Choy), Cauliflower, Cavalo Broccolo, Collards, Kale, Kohlrabi, Mizuna, Mustard Greens, Mustard Spinach, and Rape Greens

1-3 pounds of GRANDEVO per acre

Diamondback moth, cabbage looper, imported cabbageworm, cabbage webworm, cross-striped cabbageworm, beet armyworm, armyworms, light brown apple moth, cutworms

2-3 pounds of GRANDEVO per acre

Whiteflies, thrips, aphids, leafhoppers, stink bugs, plant bugs, mites, billbugs, yellow margined leaf beetle larvae, bagrada bug

Yellow-margined leaf beetle larvae – apply to newly hatched to 2nd instar. If adult beetles are also present, tank mix with a knockdown insecticide.

1-3 pounds of GRANDEVO per ½ acre (2-6 pounds of GRANDEVO per acre)

For control of low to medium infestation levels of soil insects, use a pre-plant or at-plant in furrow drench application in 50 to 75 gallons of water per ½ acre (100 to 150 gallons of water per acre) or as an in furrow spray in 20 to 50 gallons of water per acre. When very high pest infestation levels are anticipated or encountered, other effective soil treatments may be necessary.

Supplemental control with drip applications, where available, may be necessary on a 10 - 14 day schedule for soil insect control. Please refer to drip chemigation instructions.

Cutworms, root and seed maggots, symphylans, wireworms

Bulb Vegetables

Leek, Garlic, Onion (Bulb and Green), and Shallot

1-3 pounds of GRANDEVO per acre

Loopers, omnivorous leafroller, hornworm, imported cabbageworm, diamondback moth, green cloverworm, webworms, saltmarsh caterpillar, armyworms, cutworms, cross-striped cabbageworm, *Heliothis*, European corn borer, leek moth

2-3 pounds of GRANDEVO per acre

aphids, thrips

1-3 pounds of GRANDEVO per 1/2 acre (2-6 pounds of GRANDEVO per acre)

For control of low to medium infestation levels of soil insects, use a pre-plant or at-plant in furrow drench application in 50 to 75 gallons of water per 1/2 acre (100 to 150 gallons of water per acre) or as an in furrow spray in 20 to 50 gallons of water per acre. When very high pest infestation levels are anticipated or encountered, other effective soil treatments may be necessary.

Cutworms, root and seed maggots, symphylans, wireworms

Bushberries

Blueberry, Currant, Gooseberry, Huckleberry, Elderberry, Juneberry, Ligonberry, and Salal

1-3 pounds of GRANDEVO per acre

Armyworms, cherry fruitworm, cranberry fruitworm, fireworms, leafrollers, loopers

2-3 pounds of GRANDEVO per acre

Aphids, blueberry maggot, thrips, stink bugs, spotted wing drosophila, fruit flies, flea beetles, adult Japanese beetles

Caneberries

Blackberry, Loganberry, Red and Black Raspberry, and Cultivars, Varieties and/or Hybrids of These

1-3 pounds of GRANDEVO per acre

Beet armyworm, bertha armyworm, green fruitworm, leafrollers, loopers, western raspberry fruitworm, armyworms

2-3 pounds of GRANDEVO per acre

Aphids, thrips, stink bugs, spotted wing drosophila, fruit flies, flea beetles, adult Japanese beetles

Cereal Grains

Barley, Buckwheat, Oats, Pearl Millet, Proso Millet, Rye, Sorghum (Milo), Triticale, and Wheat

1-3 pounds of GRANDEVO per acre

Armyworms, corn earworm (headworm), southwestern corn borer, webworms

2-3 pounds of GRANDEVO per acre

Aphids (including greenbug), thrips, cereal leaf beetle adults and larvae, chinch bugs, mites

Citrus Fruit

Grapefruit, Lemons, Limes, Oranges, and Tangerines

1-3 pounds of GRANDEVO per acre

Fruittree leafroller, orangedog, citrus cutworm, citrus leafminer

2-3 pounds of GRANDEVO per acre

Aphids, California red scale, Florida red scale, two-spotted spider mite, Texas citrus mite, citrus red mite, citrus rust mite, six-spotted spider mite, Asian citrus psyllid, citrus whitefly, cloudy-winged whitefly, citrus blackfly, citrus thrips, mealybugs, stink bugs, spotted wing drosophila, fruit flies, flea beetles, adult Japanese beetles, glassy-winged sharpshooter

Corn (Field Corn, Sweet Corn, Popcorn and Corn Grown for Seed)

1-3 pounds of GRANDEVO per acre

Armyworms, European corn borer, southwestern corn borer, western bean cutworm, corn earworm, webworms, common stalk borer, lesser cornstalk borer

2-3 pounds of GRANDEVO per acre

Corn leaf aphid, stink bugs, thrips, mites, chinch bugs, corn rootworm beetles

1-3 pounds of GRANDEVO per 1/2 acre (2-6 pounds of GRANDEVO per acre)

For control of low to medium infestation levels of soil insects, use a pre-plant or at-plant in furrow drench application in 50 to 75 gallons of water per 1/2 acre (100 to 150 gallons of water per acre) or as an in furrow spray in 20 to 50 of water gallons per acre. When very high pest infestation levels are anticipated or encountered, other effective soil treatments may be necessary.

Cutworms, root and seed maggots, seed corn beetle, symphylans, wireworms

Seed Treatment for Corn

For suppression of soil-dwelling pests, including root and seed maggots, corn rootworm larvae, and wireworms, apply 5 pounds of GRANDEVO per 100 pounds of seed in accordance with the instructions presented in the SEED TREATMENT USE DIRECTIONS.

Cotton

1-3 pounds of GRANDEVO per acre

European corn borer, cotton bollworm, tobacco budworm, loopers (soybean and cabbage), saltmarsh caterpillar, fall armyworm, yellow-striped armyworm

2-3 pounds of GRANDEVO per acre

Cotton aphid, *Lygus*, leafhoppers, thrips, cotton fleahopper, silverleaf whitefly, stink bugs, mites

1-3 pounds of GRANDEVO per 1/2 acre (2-6 pounds of GRANDEVO per acre)

For control of low to medium infestation levels of soil insects, use a pre-plant or at-plant in furrow drench application in 50 to 75 gallons of water per 1/2 acre (100 to 150 gallons of water per acre) or as an in furrow spray in 20 to 50 gallons of water per acre. When very high pest infestation levels are anticipated or encountered, other effective soil treatments may be necessary.

Cutworms, root and seed maggots, wireworms

Seed Treatment for Cotton

For suppression of soil-dwelling pests, including root and seed maggots and wireworms, apply 5 pounds of GRANDEVO per 50 pounds of seed in accordance with the instructions presented in the SEED TREATMENT USE DIRECTIONS.

Cranberry

2-3 pounds of GRANDEVO per acre

Armyworms, brown spanworm, cranberry fruitworm, cutworms, leafrollers, fireworms, loopers, sparganothis fruitworm, aphids, thrips, mites, spotted wing drosophila, stink bugs, fruit flies, flea beetles, adult Japanese beetles, cranberry blossom weevil

Do not apply to flooded fields.

Cucurbit Vegetables

Cucumber, Edible Gourds, Muskmelon, Cantaloupe, Pumpkin, Watermelon, and Winter and Summer Squash

1-3 pounds of GRANDEVO per acre

Armyworms, cabbage looper, melonworm, pickleworm, rindworm complex, corn earworm, cutworms, cucumber beetle

2-3 pounds of GRANDEVO per acre

Whiteflies, aphids, thrips, mites, stink bugs, spotted wing drosophila, fruit flies, flea beetles, adult Japanese beetles

3 pounds of GRANDEVO per 1/2 acre (6 pounds of GRANDEVO per acre)

For control of low to medium infestation levels of soil insects, use a pre-plant or at-plant in furrow drench application in 50 to 75 gallons of water per 1/2 acre (100 to 150 gallons of water per acre) or as an in furrow spray in 20 to 50 gallons of water per acre. When very high pest

infestation levels are anticipated or encountered, other effective soil treatments may be necessary.

Cutworms, root and seed maggots, symphylans, wireworms

Fig

1-3 pounds of GRANDEVO per acre

Navel orangeworm

2-3 pounds of GRANDEVO per acre

Aphids, thrips, stink bugs, spotted wing drosophila, fruit flies, flea beetles, adult Japanese beetles

Flowers, Bedding Plants and Ornamentals – ground application only to non-blooming plants

1-3 pounds of GRANDEVO per acre or 1-3 pounds of GRANDEVO per 100 gallons of water

Loopers, tobacco budworm, omnivorous looper, omnivorous leafroller, diamondback moth, armyworms, ello moth, lo moth, oleander moth, azalea caterpillar

2-3 pounds of GRANDEVO per acre or 2-3 pounds of GRANDEVO per 100 gallons of water

Whiteflies, aphids, thrips, azalea lace bug, *Lygus*, mites

Fruiting Vegetables

Tomato, Tomatillo, Pepper, Groundcherry, Pepino, Okra, and Eggplant

1-3 pounds of GRANDEVO per acre

Loopers, hornworms, tomato fruitworm, variegated cutworm, saltmarsh caterpillar, armyworms (including beet and yellow-striped), tomato pinworm, European corn borer

2-3 pounds of GRANDEVO per acre

Colorado potato beetle larvae – apply to newly hatched to 2nd instar larvae. If adult beetles are also present, tank mix with a knockdown insecticide.

Aphids, mites, stink bugs, *Lygus*, pepper weevil, whiteflies, plant bugs, psyllids, thrips, spotted wing drosophila, fruit flies, flea beetles, adult Japanese beetles

3 pounds of GRANDEVO per ½ acre (6 pounds of GRANDEVO per acre)

For control of low to medium infestation levels of soil insects, use a pre-plant or at-plant in furrow drench application in 50 to 75 gallons of water per ½ acre (100 to 150 gallons of water per acre) or as an in furrow spray in 20 to 50 gallons of water per acre. When very high pest infestation levels are anticipated or encountered, other effective soil treatments may be necessary.

Supplemental control with drip applications, where available, may be necessary on a 10 to 14 day schedule for soil insect control. Please refer to drip chemigation instructions.

Cutworms, root and seed maggots, symphylans, wireworms

Grape, Amur River Grape, Gooseberry, Kiwifruit, Maypop and Schisandra Berry

1-3 pounds of GRANDEVO per acre

Grape leaf skeletonizer, grape leafroller, omnivorous leafroller, orange tortrix, obliquebanded leafroller, grape berry moth, light brown apple moth

2-3 pounds of GRANDEVO per acre

Pacific spider mite, Willamette spider mite, two-spotted spider mite, leafhoppers, mites, mealybugs, stink bugs, glassy-winged sharpshooter, whiteflies, thrips, spotted wing drosophila, fruit flies, flea beetles, adult Japanese beetles

Herbs and Spices

Angelica, Balm, Basil, Borage, Burnet, Chamomile, Catnip, Chervil, Chive, Clary, Coriander (Cilantro), Costmary, Curry, Dillweed, Horehound, Hyssop, Lavender, Lemongrass, Lovage, Marjoram, Nasturtium, Parsley (Dried), Rosemary, Sage, Savory (Summer and Winter), Sweet Bay, Tansy, Tarragon, Thyme, Wintergreen, Woodruff, and Wormwood

1-3 pounds of GRANDEVO per acre

Loopers, saltmarsh caterpillar, armyworms

2-3 pounds of GRANDEVO per acre

Aphids, thrips, whiteflies, mites

Hops and Dried Cones

1-3 pounds of GRANDEVO per acre

Armyworms, loopers

2-3 pounds of GRANDEVO per acre

Hops aphid, thrips, whiteflies, mites

Leafy Vegetables

Arugula, Celery, Corn Salad, Cress, Dandelion, Dock, Edible-Leaved Chrysanthemum, Endive, Fennel, Head Lettuce, Leaf Lettuce, Parsley, Purslane, Radicchio, Rhubarb, Spinach, and Swiss Chard

1-3 pounds of GRANDEVO per acre

Cabbage looper, diamondback moth, armyworms, loopers, cutworm species, green cloverworm, tobacco budworm

2-3 pounds of GRANDEVO per acre

Aphids, whiteflies, thrips, psyllids, stink bugs, mites

3 pounds of GRANDEVO per 1/2 acre (6 pounds of GRANDEVO per acre)

For control of low to medium infestation levels of soil insects, use a pre-plant or at-plant in furrow drench application in 50 to 75 gallons of water per 1/2 acre (100 to 150 gallons of water per acre) or as an in furrow spray in 20 to 50 gallons of water per acre. When very high pest infestation levels are anticipated or encountered, other effective soil treatments may be necessary.

Cutworms, root and seed maggots, symphylans, wireworms

Leaves of Root and Tuber Vegetables

Beets and Turnips

1-3 pounds of GRANDEVO per acre

Cabbage looper, diamondback moth, armyworms

2-3 pounds of GRANDEVO per acre

Aphids, whiteflies, psyllids, stink bugs

Legume Vegetables (Succulent or Dried) and Grain Crops

Adzuki Bean, Blackeyed Pea, Beans, Chickpea, Cowpea, Crowder Pea, Edible-Pod Pea, English Pea, Fava Bean, Field Bean, Field Pea, Garbanzo Bean, Garden Pea, Green Pea, Kidney Bean, Lentils, Lima Bean, Lupins, Mung Bean, Navy Bean, Peas, Pigeon Pea, Pinto Bean, Runner Bean, Snap Bean, Snow Pea, Soybean, Sugar Snap Pea, Tepary Bean, Wax Bean, and Yardlong Bean

1-3 pounds of GRANDEVO per acre

Armyworms, corn earworm, green cloverworm, loopers, podworms, cabbage looper, soybean looper, velvetbean caterpillar

2-3 pounds of GRANDEVO per acre

Aphids, stink bugs, mites, leafhoppers, whiteflies, thrips, bean leaf beetle, Mexican bean beetle, spotted wing drosophila, fruit flies, flea beetles, adult Japanese beetles, kudzu bugs

Seed Treatment for Legumes

For suppression of soil-dwelling pests, including cutworms, root and seed maggots, symphylans, and wireworms, apply 2 pounds of GRANDEVO per 100 pounds of seed in accordance with the instructions presented in the SEED TREATMENT USE DIRECTIONS.

Oilseed Crops

Canola, Safflower, and Sunflower (including Sunflower Grown for Seed)

1-3 pounds of GRANDEVO per acre

Armyworms, diamondback moth, loopers, saltmarsh caterpillar, *Heliothis*, headworms

2-3 pounds of GRANDEVO per acre

Aphids, thrips, whiteflies, mites, kudzu bugs

Peanut

1-3 pounds of GRANDEVO per acre

Armyworms, cabbage looper, corn earworm, soybean looper, green cloverworm, European corn borer, podworms, red-necked peanut worm, saltmarsh caterpillar, velvetbean caterpillar

2-3 pounds of GRANDEVO per acre

Aphids, thrips, whiteflies, mites

3 pounds of GRANDEVO per 1/2 acre (6 pounds of GRANDEVO per acre)

For control of low to medium infestation levels of soil insects, use a pre-plant or at-plant in furrow drench application in 50 to 75 gallons of water per 1/2 acre (100 to 150 gallons of water per acre) or as an in furrow spray in 20 to 50 gallons of water per acre. When very high pest infestation levels are anticipated or encountered, other effective soil treatments may be necessary.

Burrowing bug, cutworms, root and seed maggots, wireworms

Peppermint

1-3 pounds of GRANDEVO per acre

Loopers, saltmarsh caterpillar, armyworms

Pineapple

1-3 pounds of GRANDEVO per acre

Gummosos-Batracheda Comosae (Hodges), *Thecla-Thecla Basilides* (Geyr)(Fruitborer)

Pome Fruit

Apples, Crabapple, Loquat, Mayhaw, Pears, and Quince

1-3 pounds of GRANDEVO per acre

Leafrollers (including fruittree, obliquebanded, red-banded, variegated), codling moth, oriental fruit moth, tufted apple budmoth, light brown apple moth

Application timing: optimal timing for leafrollers, codling moth and oriental fruit moth can vary between species and geographic locations. Monitor moth flights with pheromone traps and scout regularly to determine larval populations. GRANDEVO can be used to supplement mating disruption programs.

2-3 pounds of GRANDEVO per acre

Aphids, apple maggot, mealybugs, pear psylla, San Jose scale, stink bugs, thrips, whiteflies, mites, plum curculio, spotted wing drosophila, fruit flies, flea beetles, adult Japanese beetles

Pomegranate

1-3 pounds of GRANDEVO per acre

Armyworms, cankerworms, codling moth, cutworms, filbert leafroller, fruittree leafroller, gypsy moth, obliquebanded leafroller, oriental fruit moth, red-banded leafroller, tufted apple budmoth, twig borer, variegated leafroller, walnut caterpillar, European red mite, McDaniel spider mite, Pacific spider mite, two-spotted red mite, stink bugs, spotted wing drosophila, fruit flies, flea beetles, adult Japanese beetles, leaf-footed plant bugs

Root and Tuber Vegetables

Black Salsify, Carrot, Cassava, Celeriac, Chayote Root, Chicory, Chinese Artichoke, Edible Burdock, Garden Beet, Ginger, Ginseng, Horseradish, Jerusalem Artichoke, Oriental Radish, Parsnip, Potatoes, Radish, Rutabaga, Salsify, Skirret, Spanish Salsify, Sugar Beet, Sweet Potatoes, Tumeric, Turnip, Turnip Rooted Chervil, Turnip Rooted Parsley, and Yams

1-3 pounds of GRANDEVO per acre

Armyworms, artichoke plume moth, European corn borer, loopers

Colorado potato beetle larvae – apply to newly hatched to 2nd instar larvae. If adult beetles are also present, tank mix with a knockdown insecticide. Heavy infestations require repeat application.

2-3 pounds of GRANDEVO per acre

Aphids, potato aphid, potato leafhopper, stink bugs, psyllids, whiteflies

3 pounds of GRANDEVO per ½ acre (6 pounds of GRANDEVO per acre)

For control of low to medium infestation levels of soil insects, use a pre-plant or at-plant in furrow drench application in 50 to 75 gallons of water per ½ acre (100 to 150 gallons of water per acre) or as an in furrow spray in 20 to 50 gallons of water per acre. When very high pest infestation levels are anticipated or encountered, other effective soil treatments may be necessary.

Cutworms, root and seed maggots, symphylans, wireworms

Shade and Ornamental Trees

1-3 pounds of GRANDEVO per acre or 1-3 pounds of GRANDEVO per 100 gallons of water

Blackheaded budworm, California oakworm, Douglas fir tussock moth, elm spanworm, fruittree leafroller, greenstriped mapleworm, hemlock looper, jack pine budworm, mimosa webworm, pine butterfly, saddleback caterpillar, saddle prominent caterpillar, spruce budworm, tent caterpillar, western tussock moth, gypsy moth

2-3 pounds of GRANDEVO per acre or 2-3 pounds of GRANDEVO per 100 gallons of water

Aphids, lace bugs, mites, whiteflies, wooly adelgid, elm leaf beetle, imported willow leaf beetle, viburnum beetle

Elm leaf beetle, imported willow leaf beetle, viburnum beetle – apply to newly hatched to 2nd instar. If adult beetles are also present, tank mix with a knockdown insecticide. Heavy infestations may require repeat applications.

Stone Fruits

Apricots, Cherry, Nectarine, Peach, Plum, and Prune

1-3 pounds of GRANDEVO per acre

Green fruitworm, leafrollers (including obliquebanded, fruittree, pandemic, red-banded, and variegated), oriental fruit moth, redhumped caterpillar, tent caterpillar, peach twig borer

Application timing: optimal timing for peach twig borer and leafrollers can vary between species and geographic locations. Monitor moth flights with pheromone traps and scout regularly to determine larval populations. GRANDEVO can be used to supplement mating disruption programs.

2-3 pounds of GRANDEVO per acre

Aphids, cherry fruit fly, mealybugs, San Jose scale, stink bugs, white peach scale, thrips, whiteflies, mites, spotted wing drosophila, fruit flies, flea beetles, adult Japanese beetles

Strawberry

1-3 pounds of GRANDEVO per acre

Armyworms, leafrollers, cutworms

2-3 pounds of GRANDEVO per acre

Aphids, *Lygus*, mites, thrips, whiteflies, stink bugs, spotted wing drosophila, fruit flies, flea beetles, adult Japanese beetles

3 pounds of GRANDEVO per ½ acre (6 pounds of GRANDEVO per acre)

For control of low to medium infestation levels of soil insects, use a pre-plant or at-plant in furrow drench application in 50 to 75 gallons of water per ½ acre (100 to 150 gallons of water per acre) or as an in furrow spray in 20 to 50 gallons of water per acre. When very high pest

infestation levels are anticipated or encountered, other effective soil treatments may be necessary.

Cutworms, root and seed maggots, symphylans, wireworms

Sugar Cane

1-3 pounds of GRANDEVO per 1/2 acre (2 - 6 pounds of GRANDEVO per acre)

White grubs, wireworms

Apply 1-3 pounds of GRANDEVO (2 - 6 pounds of GRANEVO per acre) or 1.8 – 7.35 ounces per 1000 row feet in a 5 - 7 inch band (T-band) directly on the seed piece and surrounding soil in the open furrows immediately before covering with soil.

For grubs, applications should be timed to occur shortly after egg hatch when grubs are 1st or 2nd instar.

Tobacco

1-3 pounds of GRANDEVO per acre

Hornworms, tobacco budworm, loopers

2-3 pounds of GRANDEVO per acre

Aphids, thrips, whiteflies, mites

3 pounds of GRANDEVO per 1/2 acre (6 pounds of GRANDEVO per acre)

For control of low to medium infestation levels of soil insects, use a pre-plant or at-plant in furrow drench application in 50 to 75 gallons of water per 1/2 acre (100 to 150 gallons of water per acre) or as an in furrow spray in 20 to 50 gallons of water per acre. When very high pest infestation levels are anticipated or encountered, other effective soil treatments may be necessary.

Cutworms, root and seed maggots, symphylans, wireworms

Tree Farms and Plantations

Conifers, Including Christmas Trees and Deciduous Trees

1-3 pounds of GRANDEVO per acre or 1-3 pounds of GRANDEVO per 100 gallons of water

Bagworm, fall webworm, gypsy moth, hemlock looper, jack pine budworm, pine tip moth, redhumped caterpillar, spruce budworm, tent caterpillar, tussock moths

2-3 pounds of GRANDEVO per acre or 2-3 pounds of GRANDEVO per 100 gallons of water

Cottonwood leaf beetle - apply to newly hatched to 2nd instar larvae. If adult beetles are also present, tank mix with a knockdown insecticide. Heavy infestations may require repeat application.

Tree Nuts and Pistachios

Almonds, Cashew, Chestnut, Filbert (Hazelnut), Macadamia Nut, Pecan, Pistachios, and Walnut

1-3 pounds of GRANDEVO per acre

Fall webworm, filbert worm, hickory shuckworm, navel orange worm, obliquebanded leafroller, peach twig borer, pecan nut casebearer, redhumped caterpillar

2-3 pounds of GRANDEVO per acre

Aphids, mealybugs, San Jose scale, walnut scale, whiteflies, pecan weevil, mites

Tropical and Subtropical Fruit

Acerola, Atemoya, Avocado, Biriba, Black Sapote, Canistel, Cherimoya, Custard Apple, Feijoa, Guava, Ilama, Jaboticaba, Kiwi, Longan, Lychee, Mamey Sapote, Mango, Papaya, Passionfruit, Pulasan, Rambutan, Sapodilla, Soursop, Spanish Lime, Star Apple, Starfruit, Sugar Apple, Ti Palm Leaves, Wax Jambu (Wax Apple), and White Sapote

1-3 pounds of GRANDEVO per acre

Avocado leafroller, citrus peelminer, cutworms, fruittree leafroller, omnivorous leafroller, orange tortrix, western tussock moth, aphids, thrips, whiteflies, stink bugs, spotted wing drosophila, fruit flies, flea beetles, adult Japanese beetles

Turf, Including Turf Grown for Seed, Lawns and Recreational Turf

2-4 pounds of GRANDEVO per acre or 0.75 – 1.5 ounces per 1000 sq. ft.

Armyworms, cutworms, sod webworms

3 pounds of GRANDEVO per 1/2 acre (6 pounds of GRANDEVO per acre) or 2.25 ounces per 1000 sq. ft.

Chinch bug, leafhoppers

2-4 pounds of GRANDEVO per 1/5 acre (10-20 pounds of GRANDEVO per acre) or 4-8 ounces per 1000 sq. ft.

White grubs (such as larvae of Asiatic garden beetle, black turfgrass ataenius, European chafer, green June beetle, *Aphodius* spp., May or June beetles (*Phyllophaga* spp.), northern and southern masked chafers (*Cyclocephala* spp.), sugarcane grub (*Tomarus* spp.) and Oriental beetle). Apply Grandevo soon after egg hatch when grubs are 1st or 2nd instar.

Mix specified dosage of GRANDEVO in sufficient water to provide thorough coverage of turf. For control of white grubs and annual bluegrass weevils, a minimum of 100 gallons of water per acre or 300 fluid ounces of water per 1000 square feet is recommended. For best control, thoroughly irrigate following irrigation to moisten the top inch of soil. There should be no more

than ½ inch of thatch present at the time of application. Under dry conditions where thatch is present, prewatering is recommended prior to application for grub or weevil control.

For control of armyworms, cutworms, webworms, chinch bugs or leafhoppers, do not irrigate following application.

For grubs, applications should be timed to occur shortly after egg hatch when grubs are 1st or 2nd instar.

Poultry Houses

1 pound of GRANDEVO per 12 gallons of water

Flies, poultry litter beetle

Treat when litter is totally replaced. Apply to walls, ceiling and floors of the poultry house. Replace litter only after the surfaces are totally dry.

FOR USE ON THE FOLLOWING CROPS FOR CONTROL OF SPECIFIED NEMATODES:

Pre-harvest Interval (PHI) = 0 days

Brassica (Cole) Leafy Vegetables

Broccoli, Broccoli Raab, Brussels Sprouts, Cabbage, Chinese Broccoli, Chinese Cabbage (Bok Choy), Chinese Cabbage (Napa), Chinese Mustard Cabbage (Gai Choy), Cauliflower, Cavalo Broccolo, Collards, Kale, Kohlrabi, Mizuna, Mustard Greens, Mustard Spinach, and Rape Greens

1-3 pounds of GRANDEVO per ½ acre (2-6 pounds of GRANDEVO per acre)

For control of low to medium infestation levels of nematodes use a pre-plant or at-plant only in furrow drench application in 50 to 75 gallons of water per ½ acre (100 to 150 gallons of water per acre) or as an in furrow spray in 20 to 50 gallons of water per acre. When very high pest infestation levels are anticipated or encountered, other effective soil treatments may be necessary.

Root Knot, Lesion, Ring, Sting and Stunt Nematodes

Bulb Vegetables

Leek, Garlic, Onion (Bulb and Green), and Shallot

1-3 pounds of GRANDEVO per ½ acre (2-6 pounds of GRANDEVO per acre)

For control of low to medium infestation levels of nematodes, use a pre-plant or at-plant only in furrow drench application in 50 to 75 gallons of water per ½ acre (100 to 150 gallons of water per acre) or as an in furrow spray in 20 to 50 gallons of water per acre. When very high pest infestation levels are anticipated or encountered, other effective soil treatments may be necessary.

Root Knot, Lesion, Ring, Sting and Stunt Nematodes

Corn (Field Corn, Sweet Corn, Popcorn and Corn Grown for Seed)

1-3 pounds of GRANDEVO per ½ acre (2-6 pounds of GRANDEVO per acre)

For control of low to medium infestation levels of nematodes, use a pre-plant or at-plant only in furrow drench application in 50 to 75 gallons of water per ½ acre (100 to 150 gallons of water per acre) or as an in furrow spray in 20 to 50 gallons of water per acre. When very high pest infestation levels are anticipated or encountered, other effective soil treatments may be necessary.

Root Knot, Lesion, Ring, Sting and Stunt Nematodes

Seed Treatment for Corn

For suppression of plant-parasitic nematodes, apply 5 pounds of GRANDEVO per 100 pounds of seed in accordance with the instructions presented in the SEED TREATMENT USE

DIRECTIONS.

Cotton

1-3 pounds of GRANDEVO per 1/2 acre (2-6 pounds of GRANDEVO per acre)

For control of low to medium infestation levels of nematodes, use a pre-plant or at-plant only in furrow drench application in 50 to 75 gallons of water per 1/2 acre (100 to 150 gallons of water per acre) or as an in furrow spray in 20 to 50 gallons of water per acre. When very high pest infestation levels are anticipated or encountered, other effective soil treatments may be necessary.

Root Knot Nematodes

Seed Treatment for Cotton

For suppression of plant-parasitic nematodes, apply 5 pounds of GRANDEVO per 50 pounds of seed in accordance with the instructions presented in the SEED TREATMENT USE DIRECTIONS.

Cucurbit Vegetables

Cucumber, Edible Gourds, Muskmelon, Cantaloupe, Pumpkin, Watermelon, and Winter and Summer Squash

3 pounds of GRANDEVO per 1/2 acre (6 pounds of GRANDEVO per acre)

For control of low to medium infestation levels of nematodes, use a pre-plant or at-plant only in furrow drench application in 50 to 75 gallons of water per 1/2 acre (100 to 150 gallons of water per acre) or as an in furrow spray in 20 to 50 gallons of water per acre. When very high pest infestation levels are anticipated or encountered, other effective soil treatments may be necessary.

Root Knot, Lesion, Ring, Sting and Stunt Nematodes

Fruiting Vegetables

Tomato, Tomatillo, Pepper, Groundcherry, Pepino, Okra, and Eggplant

3 pounds of GRANDEVO per 1/2 acre (6 pounds of GRANDEVO per acre)

For control of low to medium infestation levels of nematodes, use a pre-plant or at-plant only in furrow drench application in 50 to 75 gallons of water per 1/2 acre (100 to 150 gallons of water per acre) or as an in furrow spray in 20 to 50 gallons of water per acre. When very high pest infestation levels are anticipated or encountered, other effective soil treatments may be necessary.

Root Knot, Lesion, Ring, Sting and Stunt Nematodes

Leafy Vegetables

Arugula, Celery, Corn Salad, Cress, Dandelion, Dock, Edible-Leaved Chrysanthemum, Endive, Fennel, Head Lettuce, Leaf Lettuce, Parsley, Purslane, Radicchio, Rhubarb, Spinach, and Swiss Chard

3 pounds of GRANDEVO per 1/2 acre (6 pounds of GRANDEVO per acre)

For control of low to medium infestation levels of nematodes, use a pre-plant or at-plant only in furrow drench application in 50 to 75 gallons of water per 1/2 acre (100 to 150 gallons of water per acre) or as an in furrow spray in 20 to 50 gallons of water per acre. When very high pest infestation levels are anticipated or encountered, other effective soil treatments may be necessary.

Root Knot, Lesion, Ring, Sting and Stunt Nematodes

Legume Vegetables (Succulent or Dried) and Grain Crops

Adzuki Bean, Blackeyed Pea, Beans, Chickpea, Cowpea, Crowder Pea, Edible-Pod Pea, English Pea, Fava Bean, Field Bean, Field Pea, Garbanzo Bean, Garden Pea, Green Pea, Kidney Bean, Lentils, Lima Bean, Lupins, Mung Bean, Navy Bean, Peas, Pigeon Pea, Pinto Bean, Runner Bean, Snap Bean, Snow Pea, Soybean, Sugar Snap Pea, Tepary Bean, Wax Bean, and Yardlong Bean

Seed Treatment for Legumes

For suppression of plant-parasitic nematodes, apply 2 pounds of GRANDEVO per 100 pounds of seed in accordance with the instructions presented in the SEED TREATMENT USE DIRECTIONS.

Peanut

3 pounds of GRANDEVO per 1/2 acre (6 pounds of GRANDEVO per acre)

For control of low to medium infestation levels of nematodes, use a pre-plant or at-plant only in furrow drench application in 50 to 75 gallons of water per 1/2 acre (100 to 150 gallons of water per acre) or as an in furrow spray in 20 to 50 gallons of water per acre. When very high pest infestation levels are anticipated or encountered, other effective soil treatments may be necessary.

Root Knot, Lesion, Ring, Sting and Stunt Nematodes

Supplemental control with a layby application at pegging stage may be necessary for additional suppression of nematodes.

Root and Tuber Vegetables

Black Salsify, Carrot, Cassava, Celeriac, Chayote Root, Chicory, Chinese Artichoke, Edible Burdock, Garden Beet, Ginger, Ginseng, Horseradish, Jerusalem Artichoke, Oriental Radish, Parsnip, Potatoes, Radish, Rutabaga, Salsify, Skirret, Spanish Salsify, Sugar Beet, Sweet Potatoes, Tumeric, Turnip, Turnip-rooted Chervil, Turnip-rooted Parsley, and Yams

3 pounds of GRANDEVO per 1/2 acre (6 pounds of GRANDEVO per acre)

For control of low to medium infestation levels of nematodes, use a pre-plant or at-plant only in furrow drench application in 50 to 75 gallons of water per ½ acre (100 to 150 gallons of water per acre) or as an in furrow spray in 20 to 50 gallons of water per acre. When very high pest infestation levels are anticipated or encountered, other effective soil treatments may be necessary.

Root Knot, Lesion, Ring, Sting and Stunt Nematodes

Strawberry

3 pounds of GRANDEVO per ½ acre (6 pounds of GRANDEVO per acre)

For control of low to medium infestation levels of nematodes, use a pre-plant or at-plant only in furrow drench application in 50 to 75 gallons of water per ½ acre (100 to 150 gallons of water per acre) or as an in furrow spray in 20 to 50 gallons of water per acre. When very high pest infestation levels are anticipated or encountered, other effective soil treatments may be necessary.

Root Knot, Lesion, Ring, Sting and Stunt Nematodes

Tobacco

3 pounds of GRANDEVO per ½ acre (6 pounds of GRANDEVO per acre)

For control of low to medium infestation levels of nematodes, use a pre-plant or at-plant only in furrow drench application in 50 to 75 gallons of water per ½ acre (100 to 150 gallons of water per acre) or as an in furrow spray in 20 to 50 gallons of water per acre. When very high pest infestation levels are anticipated or encountered, other effective soil treatments may be necessary.

Root Knot, Lesion, Ring, Sting and Stunt Nematodes

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage and disposal.

Pesticide Storage: Store in original container in a cool, dry place.

Pesticide Disposal: To avoid wastes, use all material in this container by application according to label directions. If wastes cannot be avoided, offer remaining product to a waste disposal facility or pesticide disposal program (often such programs are run by state or local governments or by industry).

Container Handling: Nonrefillable container. Do not reuse or refill this container.

Completely empty bag into application equipment. Then offer for recycling if available, or dispose of empty bag in a sanitary landfill or by incineration. Do not burn, unless allowed by state and local ordinances. (For instances where state and local ordinances do allow burning): If burned, stay out of smoke.

WARRANTY

To the extent consistent with applicable law, the seller makes no warranty, expressed or implied, of merchantability, fitness or otherwise concerning use of this product. To the extent consistent with applicable law, the user assumes all risks of use, storage or handling that are not in accordance with the accompanying directions.

Label date:

Made in the U.S.A.

OPTIONAL LABEL CLAIMS:

- Biological Insecticide
- Dry flowable
- [OMRI Listed® (logo)]
- NOP logo

Sublabel B: Turf & Professional Landscape Use

GRANDEVO®

Alternate Brand Names: MBI-203 DF1, MBI-203 DF2, MBI-203 DF3, GRANDEVO® PTO

 (For Organic Production) (For Use in Organic Production) (Can be used in organic production)
[OMRI Listed™ (logo)]

Active Ingredient: *Chromobacterium subtsugae* strain PRAA4-1^T and spent fermentation media* 30.0%

Other Ingredients: 70.0%

Total: 100.0%

*Contains not less than 1000 Cabbage Looper Killing Units (CLKU)/mg. Note: The percent active ingredient does not indicate product performance and potency measurements are not federally standardized.

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

FIRST AID	
IF IN EYES	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15 – 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
IF INHALED	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. • Call a poison control center or doctor for further treatment advice.
IF SWALLOWED	<ul style="list-style-type: none"> • Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by the poison control center or doctor. • Do not give anything by mouth to an unconscious person.
IF ON SKIN OR CLOTHING	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 – 20 minutes. • Call a poison control center or doctor for treatment advice.
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-222-1222 for emergency medical treatment information.	

EPA Reg. No.: 84059-17

EPA Est. No.: XXXXX-XX-XXX

Net Weight: 5 lb, 30 lb.

Lot No: _____

Manufactured [by][for]: Marrone Bio Innovations, Inc.
2121 Second St., Suite B-107
Davis, CA 95618 USA
1-877-664-4476; www.marronebioinnovations.com; info@marronebio.com

US Patents No. 7,244,607

GRANDEVO® is a registered trademark of Marrone Bio Innovations, Inc.

Marrone Bio Innovations name and logo are registered trademarks of Marrone Bio Innovations, Inc.

PRECAUTIONARY STATEMENTS

Hazards to humans and domestic animals - CAUTION: Causes moderate eye irritation. Harmful if inhaled, swallowed or absorbed through the skin. Avoid contact with skin, eyes or clothing. Avoid breathing dust or spray mist. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse.

Personal Protective Equipment (PPE):

Applicators and other handlers must wear:

- long-sleeved shirt and long pants
- waterproof gloves
- shoes plus socks
- protective eyewear

Mixer/loaders and applicators must wear a dust/mist filtering respirator meeting NIOSH standards of at least N-95, R-95, or P-95. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization. Follow the manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables are available, use detergent and hot water. Keep and wash PPE separately from other laundry.

Engineering Controls: When handlers use closed systems, enclosed cabs or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

IMPORTANT: When reduced PPE is worn because a closed system is being used, handlers must be provided all PPE specified above for "applicators and other handlers" and have such PPE immediately available for use in an emergency, such as a spill or equipment breakdown.

USER SAFETY RECOMMENDATIONS

Users should:

- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Environmental Hazards: This product is toxic to aquatic invertebrates. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas.

This product is toxic to certain nontarget terrestrial arthropods. Minimize spray drift away from target area to reduce effects to nontarget insects.

For terrestrial uses: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. For any requirements specific to your State or Tribe, consult the State or Tribal agency responsible for pesticide regulation. Do not apply this product in a way that will contact workers or other

persons, either directly or through drift. Only protected handlers may be in the area during application.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 4 hours.

PPE required for early entry to treated areas (that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil or water) is:

- Coveralls
- Waterproof gloves
- Shoes plus socks
- Protective eyewear

EXCEPTION: If the product is soil incorporated or soil injected, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are **not** within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries or greenhouses.

Keep unprotected persons out of treated areas until sprays have dried.

PRODUCT INFORMATION

GRANDEVO is a biological insecticide/miticide containing fermentation solids of *Chromobacterium subtsugae* strain PRAA4-1^T for use on ornamental plants, turf and edible crops against the pests listed in the Directions for Use section. GRANDEVO functions primarily as a stomach poison for use in the control or suppression of many foliar-feeding pests, including caterpillars, and certain coleoptera. GRANDEVO has multiple effects, including reducing fecundity and oviposition, deterring feeding and acting as a stomach poison on Homoptera and Hemiptera, such as aphids, psyllids, whiteflies, *Lygus* and mealybugs, and on thrips and phytophagous mites infesting labeled crops or use sites. GRANDEVO must be mixed with water and applied as a foliar spray with ground or aerial equipment equipped for conventional insecticide spraying or by chemigation.

GRANDEVO can be used in either the field or greenhouse for the control of any labeled pest.

USE INSTRUCTIONS

GRANDEVO is a biological insecticide/miticide/nematicide for use against listed insects, mites and nematodes. Close scouting and early attention to infestations is highly recommended. For insects and mites, proper timing of application targeting new populations or recently hatched larvae and nymphs is important for optimal results. Applying GRANDEVO when pest populations are low is recommended.

This product temporarily repels honeybees, for up to 4 to 6 days after spraying. When needed, time applications so that pollination is not disrupted.

For insects and mites, thorough coverage of infested plant parts is necessary for effective control. GRANDEVO does not have systemic activity. For some crops, directed drop nozzles by ground machine are required.

Under heavy pest populations, apply a knockdown insecticide prior to or in a tank mix with GRANDEVO, use the higher label rates, shorten the spray interval, and/or increase the spray volume to improve coverage.

Repeat applications at an interval sufficient to maintain control, depending upon plant growth rate, insect and mite activity, and other factors. If attempting to control an insect population with a single application, make the treatment when egg hatch is essentially complete but before economic damage occurs.

To enhance control, consider tank mixing with contact insecticides/miticides/nematicides. Use the lower label rates of GRANDEVO when populations are low and when tank mixing with other insecticides/miticides/nematicides. Use the higher rates of GRANDEVO when applied stand-alone, when populations are high or when egg numbers are high.

For hard-to-wet crops, consider using a spreader/sticker or adjuvant, which has been approved for targeted crop use, to enhance coverage and adhesion of GRANDEVO to the crop.

GRANDEVO has been evaluated for phytotoxicity on a variety of crops under various normal growing conditions. However, testing all crop varieties, in all mixtures and combinations, is not feasible. Prior to treating entire crop, test a small portion of the crop for sensitivity.

GROUND AND AERIAL APPLICATIONS

Apply GRANDEVO in ground and aerial equipment with quantities of water sufficient to provide thorough coverage of infested plant parts. The amount of water needed per acre will depend upon crop development, weather, application equipment, and local experience.

For hand-held or backpack sprayer applicators, mix GRANDEVO at the rate of 1-3 tablespoons per 1 gallon of water to approximate 1-3 pounds of GRANDEVO per 100 gallons of water.

Do not spray when wind speed favors drift beyond the area intended for use.

Avoiding spray drift is the responsibility of the applicator.

Mixing directions

Important - Do not add GRANDEVO to the tank mix before introducing ¼ of the desired amount of water. Add water to the mix tank. Start the mechanical or hydraulic agitation to provide moderate circulation before adding GRANDEVO. Add the desired volume of GRANDEVO to the mix tank and continue circulation while adding the remainder of the water. Maintain circulation while loading and spraying. Do not mix more GRANDEVO than can be used in 24 hours. Use a strainer no finer than 50 mesh in conventional spray systems.

Spray volume

For conventional air and ground applications, use at least 10 gallons of total volume per acre in water-based sprays.

Tank mixing

Do not combine GRANDEVO in the spray tank with other pesticides, surfactants, adjuvants, or fertilizers if there has been no previous experience or use of the combination to show it is physically compatible, effective, and non-injurious under your use conditions. Observe the most restrictive of the labeling limitations and precautions of all products used in mixtures.

To ensure compatibility of tank mix combinations, they must be evaluated prior to use. To determine the physical compatibility of this product with other products, use a jar test. Using a quart jar, add the proportionate amounts of the products to one quart of water with agitation. Add dry formulations first, then flowables, and then emulsifiable concentrates last. After thoroughly mixing, let this mixture stand for 5 minutes. If the combination remains mixed or can be readily remixed, it is physically compatible. Once compatibility has been proven, use the same procedure for adding required ingredients to the spray tank.

AERIAL DRIFT REDUCTION INFORMATION

GENERAL: Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment- and weather-related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions. Where states have more stringent regulations, they should be observed.

Do not apply directly to aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, streams, marshes, ponds, estuaries, and commercial fish ponds).

INFORMATION ON DROPLET SIZE: Use only medium or coarser spray nozzles according to ASAE (S572) definition for standard nozzles. In conditions of low humidity and high temperatures, applicators should use a coarser droplet size. The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that will provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see Wind, Temperature and Humidity, and Temperature Inversions).

CONTROLLING DROPLET SIZE: Volume - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets. Pressure - Do not exceed the nozzle manufacturer's specified pressures. For many nozzle types, lower pressure produces larger droplets. When high flow rates are needed, use higher flow rate nozzles instead of increasing pressure. Number of Nozzles - Use the minimum number of nozzles that provide uniform coverage. Nozzle Orientation - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the

recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential. **Nozzle Type** - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

BOOM WIDTH: For aerial applications, the boom width must not exceed 75% of the wingspan or 90% of the rotary blade.

APPLICATION HEIGHT: Do not make applications at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind. If application includes a no-spray zone, do not release spray at a height greater than 10 feet above the ground or crop canopy.

SWATH ADJUSTMENT: When applications are made with a crosswind, the swath will be displaced downward. Therefore, on the upwind and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase with increasing drift potential (higher wind, smaller drops, etc.).

WIND: Only apply this product if the wind direction favors on-target deposition. Do not apply when the wind velocity exceeds 15 mph. Drift potential is lowest between wind speeds of 2 - 10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. NOTE: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

TEMPERATURE AND HUMIDITY: When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

TEMPERATURE INVERSIONS: Do not apply during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small, suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

SENSITIVE AREAS: The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g. when wind is blowing away from the sensitive areas). Do not allow spray to drift from the application site and contact people, structures people occupy at any time and the associated property, parks and recreation areas, non-target crops, aquatic and wetland areas, woodlands, pastures, rangelands, or animals.

CHEMIGATION USE DIRECTIONS

Spray preparation

First, prepare a suspension of GRANDEVO in a mix tank. Fill tank to ¾ of the amount of water for the area to be treated. Start mechanical or hydraulic agitation. Add the required amount of GRANDEVO, and then the remaining volume of water. Then, set the sprinkler to deliver a minimum of 0.1 to 0.3 inch of water per acre. Start sprinkler and uniformly inject the suspension of GRANDEVO into the irrigation water line so as to deliver the desired rate of GRANDEVO per acre. Inject the suspension of GRANDEVO with a positive displacement pump into the main line ahead of a right angle turn to ensure adequate mixing. GRANDEVO is to be metered continuously for the duration of the water application. If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.

Do not combine GRANDEVO with other pesticides, surfactants, adjuvants, or fertilizers for application through chemigation equipment unless prior experience has shown the combination to be physically compatible, effective and non-injurious under your conditions of use.

General Requirements -

- 1) Apply this product only through sprinkler, including center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun, solid set, or hand move, or drip (trickle) irrigation systems. Do not apply this product through any other type of irrigation system.
- 2) Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water.
- 3) If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.
- 4) Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.
- 5) A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

Specific Requirements for Chemigation Systems Connected to Public Water Systems -

- 1) Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.
- 2) Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, backflow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the flow outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.
- 3) The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- 4) The pesticide injection pipeline must contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the

system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.

- 5) The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.
- 6) Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- 7) Do not apply when wind speed favors drift beyond the area intended for treatment.

Specific Requirements for Sprinkler Chemigation -

- 1) The system must contain a functional check valve, vacuum relief valve and low-pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
- 2) The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- 3) The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- 4) The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- 5) The irrigation line or water pump must include a functional pressure switch, which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- 6) Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- 7) Do not apply when wind speed favors drift beyond the area intended for treatment.

Specific Requirements for Drip (Trickle) Chemigation -

- 1) The system must contain a functional check valve, vacuum relief valve and low-pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
- 2) The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- 3) The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- 4) The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- 5) The irrigation line or water pump must include a functional pressure switch, which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- 6) Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

Application Instructions for All Types of Chemigation -

- 1) Remove scale, pesticide residues, and other foreign matter from the chemical supply tank and entire injector system. Flush with clean water. Failure to provide a clean tank, void of scale or residues, may cause product to lose effectiveness or strength.
- 2) Determine the treatment rates as indicated in the directions for use and make proper dilutions.
- 3) Prepare a solution in the chemical tank by filling the tank with the required water and then adding product as required. Utilize agitation to keep solution in suspension.

Application Instructions for Drip Chemigation

- 1) Check to be sure that the system provides a uniform waterflow.
- 2) Irrigate crop with sufficient water to wet the root zone. Then, begin flow of the solution containing product solution from the chemical tank for a period to uniformly distribute the material. Discontinue flow of the GRANDEVO mixture and let the system continue to run only as necessary to purge the line with fresh water. Let the GRANDEVO solution remain in the root zone of the crop.

Crop	Target Insect	Application Method	Product Use Rate per Application	Application Instructions
<p>Ornamentals Herbaceous Ornamentals Flowering Plants Foliage Plants</p> <p>Woody Ornamentals Broadleaves, Shrubs and Trees Conifers, Shrubs and Trees, Citrus, Nut, Pome fruit, and Stonefruit trees</p>	<p>Loopers, tobacco budworm, omnivorous looper, omnivorous leafroller, diamondback moth, armyworms, ello moth, lo moth, oleander moth, azalea caterpillar, codling moth, oblique-banded leaf roller, cankerworms, webworms</p> <p>Whiteflies, aphids, Asian citrus psyllids, pear psylla, thrips, mites, mealybugs and scales, blackheaded budworm, California oakworm,</p>	<p>Foliar</p>	<p>1 – 3 pounds of GRANDEVO per acre or 1 – 3 pounds of GRANDEVO per 100 gallons of water</p>	<p>Apply in sufficient water to provide complete coverage but not excessive to the point of run-off</p>

	Douglas fir tussock moth, elm spanworm, fruitree leafroller, greenstriped mapleworm, hemlock looper, jack pine budworm, mimosa webworm, pine butterfly, saddleback caterpillar, saddle prominent caterpillar, spruce budworm, tent caterpillar, western tussock moth, gypsy moth			
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Crop	Target Insect	Application Method	Product Use Rate per Application (Ounces per 1,000 sq. ft.)	Product Use Rate per Application (per Acre)	Application Instructions
Turfgrass Bluegrass Bentgrass Bermudagrass Dichondra Fescue Orchardgrass <i>Poa annua</i> Ryegrass St. Augustine Zoysia mixtures and other grasses, including grasses grown for seed	Armyworms, cutworms, sod webworm, chinch bugs and leafhoppers	Foliar	0.75 – 1.5	2 – 4 pounds of GRANDEVO per acre	Mix specified dosage of GRANDEVO in sufficient water to provide thorough coverage of turf. For control of white grubs and annual bluegrass weevils, use a minimum of 100 gallons of water per acre or 300 fluid ounces of water per 1000 square feet.
Ornamental Grasses	White grubs (such as larvae of Asiatic garden beetle, black turfgrass atenioides, European chafer, green June beetle, <i>Aphodius</i> spp., May or June beetles (<i>Phyllophaga</i> spp.), northern and	Foliar followed by irrigation	4 - 8	2 - 4 lbs of GRANDEVO per 1/5 acre	For control of grubs, thoroughly irrigate to moisten the top inch of soil.

	<p>southern masked chafers (<i>Cyclocephala</i> spp.), sugarcane grub (<i>Tomarus</i> spp.) and Oriental beetle)</p> <p>Annual bluegrass billbug adults and larvae</p>			<p>There should be no more than 1/2 inch of thatch present at the time of application. Applications should be timed to occur shortly after egg hatch when grubs are 1st or 2nd instar.</p> <p>Under dry conditions where thatch is present, prewatering is recommended prior to application for grub or weevil control.</p> <p>For control of armyworms, cutworms, webworms, chinch bugs or leafhoppers, do not irrigate following application.</p>
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STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage and disposal.

Pesticide Storage: Store in original container in a cool, dry place.

Pesticide Disposal: To avoid wastes, use all material in this container by application according to label directions. If wastes cannot be avoided, offer remaining product to a waste disposal facility or pesticide disposal program (often such programs are run by state or local governments or by industry).

Container Handling: Nonrefillable container. Do not reuse or refill this container. Completely empty bag into application equipment. Then offer for recycling if available, or dispose of empty bag in a sanitary landfill or by incineration. Do not burn, unless allowed by state and local ordinances. (For instances where state and local ordinances do allow burning): If burned, stay out of smoke.

WARRANTY

To the extent permitted by applicable law, the seller makes no warranty, expressed or implied, of merchantability, fitness or otherwise concerning use of this product. The user assumes all risks of use, storage or handling that are not in accordance with the accompanying directions.

Label date:

Made in the U.S.A.

Sublabel C: Home & Garden Use

GRANDEVO®

Alternate Brand Names: MBI-203 DF1, MBI-203 DF2, MBI-203 DF3, GRANDEVO® PTO



(For Organic Gardening) (For Use in Organic Gardening) [OMRI Listed™ (logo)]

Active Ingredient: *Chromobacterium subtsugae* strain PRAA4-1^T and spent fermentation media* 30.0%

Other Ingredients: 70.0%

Total: 100.0%

*Contains not less than 1000 Cabbage Looper Killing Units (CLKU)/mg. Note: The percent active ingredient does not indicate product performance and potency measurements are not federally standardized.

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

FIRST AID	
IF IN EYES	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15 – 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
IF INHALED	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. • Call a poison control center or doctor for further treatment advice.
IF SWALLOWED	<ul style="list-style-type: none"> • Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by the poison control center or doctor. • Do not give anything by mouth to an unconscious person.
IF ON SKIN OR CLOTHING	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 – 20 minutes. • Call a poison control center or doctor for treatment advice.
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-222-1222 for emergency medical treatment information.	

EPA Reg. No.: 84059-17

EPA Est. No.: XXXXX-XX-XXX

Net Weight: 5 lb, 30 lb.

Lot No: _____

Manufactured [by][for]: Marrone Bio Innovations, Inc.
 2121 Second St., Suite B-107
 Davis, CA 95618 USA
 1-877-664-4476; www.marronebioinnovations.com; info@marronebio.com

US Patents No. 7,244,607

GRANDEVO® is a registered trademark of Marrone Bio Innovations, Inc.

Marrone Bio Innovations name and logo are registered trademarks of Marrone Bio Innovations, Inc.

PRECAUTIONARY STATEMENTS

Hazards to humans and domestic animals - CAUTION: Causes moderate eye irritation. Harmful if inhaled, swallowed or absorbed through the skin. Avoid contact with skin, eyes or clothing. Avoid breathing dust or spray mist. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse.

Environmental Hazards: This product is toxic to aquatic invertebrates. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas.

This product is toxic to certain nontarget terrestrial arthropods. Minimize spray drift away from target area to reduce effects to nontarget insects.

To protect the environment, do not allow pesticide to enter or run off into storm drains, drainage ditches, gutters or surface waters. Applying this product in calm weather when rain is not predicted for the next 24 hours will help to ensure that wind or rain does not blow or wash pesticide off the treatment area.

DIRECTIONS FOR USE

It is a violation of Federal law to apply this product in a manner inconsistent with its labeling.

HOME AND GARDEN USE DIRECTIONS

GRANDEVO is a biological insecticide/miticide containing fermentation solids of *Chromobacterium subtsugae* strain PRAA4-1^T for use on ornamental plants, turf and edible crops against the pests listed in the Directions for Use section. GRANDEVO functions primarily as a stomach poison for use in the control or suppression of many foliar-feeding pests, including caterpillars, and certain coleoptera. GRANDEVO has multiple effects, including reducing fecundity and oviposition, deterring feeding and acting as a stomach poison on Homoptera and Hemiptera, such as aphids, psyllids, whiteflies, *Lygus* and mealybugs, and on thrips and phytophagous mites infesting labeled crops or use sites. GRANDEVO must be mixed with water and applied as a foliar spray for control of above-ground pests or applied as a soil drench for control of below-ground pests.

This product temporarily repels honeybees, for up to 4 to 6 days after spraying. When needed, time applications so that pollination is not disrupted.

DIRECTIONS FOR CONTROL OF FOLIAR PESTS

WHEN TO USE

For best results, apply GRANDEVO before populations reach damaging levels or when egg deposition is observed.

BEFORE YOU USE

Read and follow these directions when using:

Do not allow spray to drift from application site.

Use only with pressurized hand-held sprayers or spray trigger bottles.

Do not allow spray mixture to stand overnight or for prolonged periods.

GRANDEVO can be applied in commonly used pressurized hand-held sprayers, spray trigger bottles and hose-end sprayers.

HOW TO USE FOR HAND-HELD SPRAYERS AND SPRAY TRIGGER BOTTLES

Fill sprayer or bottle with appropriate amount of water and concentrate.

Mix the spray solution thoroughly.

Keep the spray solution agitated during application.

HOW TO USE FOR HOSE-END SPRAYERS

Follow hose-end sprayer instructions to determine how to fill, set dial, clean and disconnect from hose.

Set dial on sprayer to deliver rate as directed below.

HOW MUCH TO USE FOR ALL APPLICATIONS

2 tablespoons of GRANDEVO per gallon of water

Some pesticides can cause phytotoxic effects ranging from slight burning or browning of leaves to distorted leaves, fruit, flowers or stems. Damage symptoms may vary with the type of plant that has been treated. It is impossible to test all plant species for phytotoxicity. To assure that the plants to be treated are not sensitive to the treatment, apply a small amount of the product to a few leaves or the above-ground portion of the plant and check back in 2-4 days for signs of phytotoxicity. Use product according to label directions.

INSECTS CONTROLLED OR SUPPRESSED ON VEGETABLES, FRUITS, NUTS, ORNAMENTAL PLANTS, TREES, SHRUBS, FLOWERS, FOLIAGE AND TROPICAL PLANTS

Adult Japanese beetles
 Alfalfa caterpillar
 Alfalfa webworm
 Adelgids
 Aphids
 Apple maggot
 Armyworms
 Cabbage looper
 Chinch bugs
 Codling moth
 Corn earworm
 Diamondback moth
 Fruit flies
 Hornworms
 Imported cabbageworm
 Kudzu bugs
 Lace bugs
 Leaf-footed plant bugs
 Leaf rollers
 Leafhoppers

- Light brown apple moth
- Loopers
- Lygus
- Mealybugs
- Mites
- Plant bugs
- Psyllids
- Scales
- Sharpshooters
- Spittle bugs
- Stink bugs
- Tent caterpillars
- Thrips
- Tufted apple budworm
- Webworms
- Whiteflies

DIRECTIONS FOR SUPPRESSION OF SOIL-BORNE PESTS (EXCLUDING TURF)

For suppression of soil-borne pests, including root and seed maggots, wireworms, symphylans, cutworms, white grubs and plant-parasitic nematodes, apply GRANDEVO as a soil drench directly into the seed furrow. Mix GRANDEVO at rate of 3 tablespoons per gallon of water, and apply the mixture at the rate of 1 quart (32 fluid ounces) per 25 feet of row. For individual plants, such as tomatoes and peppers, apply the mixture as a soil drench at the rate of 4 fluid ounces per plant.

DIRECTIONS FOR SUPPRESSION OF INSECT PESTS OF TURF

Webworms, cutworms, chinch bug, and leafhoppers

Mix GRANDEVO at the rate of 6 tablespoons per gallon of water, and apply the mixture to turf with a pressurized sprayer at the rate of 1 gallon per 250 square feet of turf.

White grubs (including green June beetle, *Aphodius* spp., May or June beetles (*Phyllophaga* spp.), northern and southern masked chafers (*Cyclocephala* spp.), sugarcane grub (*Tomarus* spp.) and Oriental beetle), annual bluegrass weevil adult and larvae. For grub control, apply GRANDEVO soon after egg hatch when grubs are 1st or 2nd instar.

Mix ½ pound (8 ounces) GRANDEVO per gallon of water, and apply at the rate of 1 gallon per 250 square feet of turf. For best control, thoroughly irrigate following irrigation to moisten the top inch of soil. There should be no more than ½ inch of thatch present at the time of application. Under dry conditions where thatch is present, pre-watering is recommended prior to application for grub or weevil control. For best results, target smaller first and second instar grubs during late summer and early fall.

For control of armyworms, cutworms, webworms, chinch bugs or leafhoppers, do not irrigate following application.

CONTROL OF OUTDOOR HOUSEHOLD PESTS

1 pound of GRANDEVO per 12 gallons of water.

Boxelder beetle and brown marmorated stinkbug

Harmless insects become nuisances when searching indoors for hibernation sites in the fall. Treat outdoor areas where the insects congregate.

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage and disposal.

Pesticide Storage: Store in a cool, dry place.

Pesticide Disposal and Container Handling: Nonrefillable container. Do not reuse or refill this container. **If empty:** Place in trash or offer for recycling if available.

If partially filled: Call your local solid waste agency for disposal instructions. Never place unused product down any indoor or outdoor drain.

WARRANTY

To the extent permitted by applicable law, the seller makes no warranty, expressed or implied, of merchantability, fitness or otherwise concerning use of this product. The user assumes all risks of use, storage or handling that are not in accordance with the accompanying directions.

Label date:

Made in the U.S.A.